Andrew Schechtman-Rook

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OPEN SOURCE EXPERIENCE

Ptplot: https://github.com/AndrewRook/ptplot

- Python package for creating interactive visualizations of sports player tracking data.
- Uses custom-built rendering engine powered by Bokeh and interfaces based on the Grammar of Graphics.

NFLWin: https://github.com/AndrewRook/NFLWin

- Win probability model for NFL play-by-play data.
- One of the first fully open (code & algorithm) NFL Win Probability models.

Various contributions to other OSS projects, including:

- Ibis
- Prefect

WORK EXPERIENCE

Director, Data Science 2023-Present
Capital One

- Designed and built a package to streamline core business metrics SQL calculations, regularly used by over 60 analysts for critical reporting needs.
- Owned the design, implementation, and upkeep of the DS Technical Interview, a key interview given to every data science candidate in the US.

Senior Manager, Data Science 2018-2023
Capital One

- Guided ongoing development of the core credit card valuations model scoring platform, delivering regular releases of new and updated models while improving the robustness and maintainability of platform infrastructure.
- Led technical development of model monitoring tools, mentoring three junior data scientists to deliver a maintainable package on time and to spec.
- Deployed the first cloud-based credit card application underwriting model in the company via a dockerized Python API, with an estimated incremental value of $35MM per year.

Manager, Data Science 2016-2018
Capital One

- Led development of a prototype language-agnostic automated machine learning model deployment framework for cloud-based applications, influencing the development direction for the company-wide credit card application processing platform.
- Created the longest-lived, most successful internal data science tool in the company, used in production models by dozens of data scientists across multiple lines of business.

Principal Data Scientist 2014-2016
Capital One Labs

- Implemented a novel approach to deliver internal technical trainings, providing over 5000 hours of classes with no instructors.
- Programmed and deployed an interactive course completion dashboard using Flask and dc.js to provide progress reports to individual students as well as company leadership.

Postdoctoral Research Associate 2014
University of Wisconsin-Madison

- Devised metrics to improve correspondence between numerical models and astronomical data. Implemented in highly optimized Python, was able to refine agreement by up to 20% with minimal increase in computation time.
- Built a fast Voronoi Tessellation algorithm to adaptively bin images, preserving spatial resolution while maximizing signal in images with over one million pixels.
- Trained and mentored undergraduate and graduate students in programming, data analysis and statistical methods.

Research Assistant 2007-2013
University of Wisconsin-Madison

- Developed non-linear Levenberg-Marquardt χ^2 fitting algorithms using a combination of Python and C++ to constrain models of spiral galaxies to data.
- Employed on-campus distributed computing resources to perform large-scale modeling in parallel, using over 20 years of computer timein 1 month.
- Assembled a hybrid C++/Python processing pipeline to clean, register, and mosaic thousands of high-resolution images with minimal user intervention, resulting in a factor of 10+ increase in analysis precision.
- Created a genetic algorithm in C++ to efficiently fit galaxy models with unusually large numbers of free parameters to high-resolution images.

TECHNICAL SKILLS

Programming: Python (numpy, scipy, pandas, sklearn, xgboost, matplotlib, pytorch), shell scripting
Databases, Orchestration, Web Design: Flask, MySQL/PostgreSQL, Prefect, Snowflake
Cloud Computing/Devops: AWS, Docker, CircleCI, Jenkins, GitHub Actions
Operating Systems: Linux, Mac
Data Analysis: Parallel and distributed computing, machine learning, hypothesis testing, nonlinear optimization

EDUCATION

PhD, Astronomy, University of Wisconsin-Madison December 2013
MS, Astronomy, University of Wisconsin-Madison June 2009
BS, Astronomy, Case Western Reserve University May 2007